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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,688	11/27/2001	Takushi Takizawa	Q66754	7306

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SUGHRUE, MION, ZINN, MACPEAK & SEAS
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EXAMINER

MULLINS, BURTON S

ART UNIT PAPER NUMBER

2834

DATE MAILED: 02/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/993,688

Applicant(s)

TAKIZAWA ET AL.

Examiner

Burton S. Mullins

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11 and 12 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on November 27, 2001 has been considered by the examiner.

Drawings

3. Figures 9-10 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi (JP 4-26345) in view of Kusumoto et al. (US 5,576,584). Hayashi (described in detail on pp.1-4 & Figs.9-10 of applicant's specification) teaches an automotive alternator comprising: a rotor 10 fixed to a shaft rotatably supported in a case (Hayashi, Fig.1); and a stator provided with a cylindrical stator core 20a supported in said case so as to envelop said rotor (Hayashi, Fig.1); slots 61 extending axially being formed in said stator core so as to line up in a circumferential direction at a ratio of two per phase per pole (see specification p.2, lines 2-5; Fig.9); and a stator winding constructed by installing a conductor wire (phases 63a/b/c) in said stator core (specification p.2, lines 13-24; Fig.9).

Hayashi differs in two respects: 1) the conductor wires are not specifically "coated with an electrical insulator" and 2) the relationship between a radial dimension (d) of the conductor wire and a circumferential width dimension (L) of the slots is not $2d < L$.

Regarding (1), Kusumoto teaches a denatured epoxy resin previously coated on the coil strands of the stator coil 22 before winding of the stator coil in the slots 23 of the stator core 21 (c.5, lines 5-15). The resin is insulative since it is made of polyester and polyurethane, for

example (c.4, lines 32-39). The resin also provides vibration absorption (c.3, lines 25-29 & 43-59).

Regarding (2), Kusumoto shows in Fig.2 that in radially outer portions of the slots 23, the radial dimension (d) of coil strands 22 and a circumferential width dimension (L) of the slots fulfills the relation $2d < L$. This allows spacing for resin to be fixed to the inner peripheral face of the slot 23. The resin provides vibration absorption (c.3, lines 25-29 & 43-59).

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Hayashi and provide insulation on the wires and spacing in the slots such that the relationship between a radial dimension (d) of the wire relative to the circumferential width dimension (L) of the slots is $2d < L$ per Kusumoto since this would have been desirable to improve the vibration absorption characteristics of the alternator.

Regarding claim 4, Fig.2 of Kusumoto shows an inner circumferential corner portion of a radially-wide flange portion on a tip portion of a tooth between slots 23 having a curved shape.

Regarding claim 5, note insulating means 24 formed on an inner wall surface of slots 23 in Kusumoto (Fig.2).

Regarding claim 6, the phase windings in the prior art and Kusumoto would be "bundled together" by the insulation means.

6. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi (JP 4-26345) and Kusumoto et al. (US 5,576,584) as applied to claim 1 above, further in view of Asao et al. (US 6,281,612). Hayashi and Kusumoto do not teach rectangular conductor wires.

Asao teaches an embodiment (Fig.11) of an automotive alternator stator winding in which rectangular-cross-shaped conductor wires 67 are used to impart radial rigidity to the stator and reduce electromagnetic noise (c.10, lines 6-27).

It would have been obvious to modify Hayashi and Kusumoto and provide rectangular-cross-shaped conductor wires per Asao since this would have been desirable to increase radial rigidity of the stator and reduce electromagnetic noise.

Regarding claim 3, when the rectangular-cross-shaped conductor wires of Asao (Fig.11) fulfill applicant's dimensional feature.

7. Claims 7, 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi and Kusumoto as applied to claim 1 above, and further in view of Cooper (EP 999,637). Kusumoto teaches a slot blocking means 25 (Fig.2), but neither he nor Hayashi teach a deforming, cylindrical plug disposed inside an opening portion of the slots, per se.

Cooper teaches an electrical machine rotor including a deformable, generally cylindrical plug (retainer 7) disposed inside an opening portion of rotor slots 3 (Fig.3). The retainers 7 are deformable since they are made of soft PEEK plastics material to minimize the risk of damage to the slot faces (c.3, lines 45-55). Cooper's deforming cylindrical plug secures the coil and itself in place (c.2, lines 34-48).

It would have been obvious to modify the slot blocking means of Hayashi and Kusumoto and provide a deforming cylindrical plug per Cooper since this would have been desirable to secure the coils in place.

Regarding claim 12, the combination of Cooper's plug with Hayashi and Kusumoto's insulation varnished on the inner slot periphery would comprise "a varnish portion disposed on an inner circumferential side of said plug."

8. Claim 7-9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi and Kusumoto as applied to claim 1 above, and further in view of Japanese SHO 59-191856 (JP '856). Kusumoto teaches a slot blocking means 25 (Fig.2), but neither he nor Hayashi teach a deforming, cylindrical plug disposed inside an opening portion of the slots, *per se*.

JP '856 teaches hollow slot wedges having a cylindrical shape (Fig.2) disposed to prevent conductors from extending beyond an inner surface of a stator core (abstract). The plug deforms depending upon slot and winding arrangements (e.g., Fig.3).

It would have been obvious to modify the slot blocking means of Hayashi and Kusumoto and provide a deforming cylindrical plug per JP '856 since this would have been desirable prevent conductors from extending beyond an inner surface of a stator core.

Regarding claim 12, the combination of the plug in JP '856 with Hayashi and Kusumoto's insulation varnished on the inner slot periphery would comprise "a varnish portion disposed on an inner circumferential side of said plug."

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi and Kusumoto as applied to claim 1 above, and further in view of Asao et al. (US 6,504,283). Neither Hayashi and Kusumoto teach asymmetrical flange ends on the stator teeth.

Asao teaches asymmetrical stator teeth flanges for the purpose of simply changing pitch and harmonic frequencies (c.12, line 28-c.13, line 35; Figs.14,16&17).

It would have been obvious to modify Hayashi and Kusumoto and provide asymmetric stator teeth flanges per Asao since this would have been desirable to simply change pitch and harmonic frequencies.

Allowable Subject Matter

10. Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not teach a deforming hollow cylindrical plug disposed inside an opening portion of the slots having a "cut portion". Cooper's plug 7 is not "hollow" nor does it comprise a "cut portion." Similarly, Ohtake's stiffeners 21 (Fig.4) are solid, not hollow. Finally, the hollow plug of JP '856 does not appear to teach or suggest a "cut portion" therein.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 305-7063. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 308-1371. The fax phone numbers for the organization where this application or

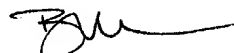
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proceeding is assigned are 305-1341 for regular communications and 305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0956.



Burton S. Mullins
Primary Examiner
Art Unit 2834

bsm
February 6, 2003